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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,621	02/21/2007	Patrick Le Bot	Serie 6425	9641

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American Air Liquide, Inc.
Intellectual Property Dept.
2700 Post Oak Boulevard
Suite 1800
Houston, TX 77056

EXAMINER	
PETTITT, JOHN F	

ART UNIT	PAPER NUMBER
3744	

MAIL DATE	DELIVERY MODE
11/12/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,621	LE BOT ET AL.	
	Examiner	Art Unit	
	John F. Pettitt	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-28* is/are pending in the application.

4a) Of the above claim(s) *17,22-24 and 28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,16,18-21 and 25-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 April 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/28/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 17, 22-24, 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 09/29/2010. It is noted that claim 28 is drawn to a non-elected species and is therefore withdrawn though not listed in the applicant's response.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
The indication that priority is claimed has check boxes which are ill arranged and create ambiguity as to whether priority is claimed.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method And Installation For Enriching Air with Oxygen Using an Air Separation Unit.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case,

without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

It is specifically noted that there does not appear to be a Brief description of the several view of the drawings.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the specification indicates that the blast furnace as BF and the drawings indicate such as HF, therefore the drawings and the specification should be consistent. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office

action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. The recitation, "the separation unit (209) is autonomous in terms of energy requirements for compressing the gas streams produced by the unit or intended for the unit" is indefinite as the applicant's own invention has energy requirements for operating the compressor or blower (S) for the pressurizing gas stream that is fed to the air separation unit and therefore, the recitation is contrary to the specification, since the air separation unit relies on this compressor and is therefore not autonomous.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 16, 18, 19, 21, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Woodward (EP 0 959 314). In regard to claims 15, 19, and 25, Woodward teaches a method and installation for enriching a pressurized gas stream (203) with one of its constituents A, which comprises the steps of: a) dividing the stream (203) into at least first (205) and second fractions (207); b) sending at least one portion of the first fraction (205) into a separation unit (209); c) supplying, from the separation unit (209), at least first (211) and second (O2) streams, the first stream (211) of which has a content of constituent A (N2) greater than that of the first fraction (205); and d) mixing at least one portion of the first stream (211) with at least one portion of the second fraction (207) in order to form a pressurized gas mixture (19), characterized in that the second fraction

(207) is expanded before at least one portion of the first stream (211) is mixed therewith.

In regard to claim 16, Woodward teaches that the pressurized gas stream (203) and the first fraction (205) are substantially at the same pressure and, only pressure drops through the fluid conduits cause of a variation in pressure between these two fluids (see Fig. 2, 4).

In regard to claim 18, Woodward teaches that the separation unit (209) is autonomous in terms of energy requirements for compressing the gas streams produced by the unit or intended for the unit (interpreted to mean that either the first fraction entering the air separation unit or the first and second streams produced from the ASU do not have compressors; in this case the first fraction entering the air separation unit is not compressed).

In regard to claim 21, the air separation unit (209 is a cryogenic distillation separation unit (parag. 32).

Claims 15, 16, 18-21, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Coveney (US 3731495). In regard to claims 15, 19-20, and 25, Coveney teaches a method and installation for enriching a pressurized gas stream (12) with one of its constituents A (N2), which comprises the steps of: a) dividing the stream (12) into at least first (14) and second fractions (12a before 12b); b) sending at least one portion of the first fraction (14) into a separation unit (B-C); c) supplying, from the separation unit (B-C), at least first (66) and second (65) streams, the first stream (66) of which has a

content of constituent A (N2) greater than that of the first fraction (14; column 8, lines 55-60); and d) mixing at least one portion of the first stream (66) with at least one portion of the second fraction (12a) in order to form a pressurized gas mixture (16), characterized in that the second fraction (12a) is expanded before at least one portion of the first stream (66) is mixed therewith. It is noted with regard to claim 20 that the recitation that the pressurized air stream is intended for a blast furnace is interpreted to mean that the air stream or its derivatives is/are capable of being used in a blast furnace. Therefore, Coveney explicitly teaches such as the oxygen product is suitable for use in a blast furnace.

In regard to claim 16, Coveney teaches that the pressurized gas stream (12) and the first fraction (14) are substantially at the same pressure and, only pressure drops through the fluid conduits cause of a variation in pressure between these two fluids (see Fig. 1).

In regard to claim 18, Coveney teaches that the separation unit (B-C) is autonomous in terms of energy requirements for compressing the gas streams produced by the unit or intended for the unit (interpreted to mean that either the first fraction entering the air separation unit or the first and second streams produced from the ASU do not have compressors; in this case the first stream (66) or the second stream (65) from the air separation unit (B-C) is not compressed).

In regard to claim 21, Coveney teaches that the air separation unit (B-C) is a cryogenic distillation separation unit (column 1, lines 5-10; column 6, line 20).

Claims 15, 18-21, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Guillard (US 5538534). In regard to claims 15, 19, and 25, Guillard teaches a method and installation for enriching a pressurized gas stream (air entering 19, 20 or intermediate stream within 19, 20, hereafter Air in) with one of its constituents A (O2), which comprises the steps of: a) dividing the stream (Air in) into at least first (21) and second fractions (22); b) sending at least one portion of the first fraction (21) into a separation unit (9); c) supplying, from the separation unit (9), at least first (14) and second (15) streams, the first stream (14) of which has a content of constituent A (O2; column 2, line 49) greater than that of the first fraction (21); and d) mixing at least one portion of the first stream (14) with at least one portion of the second fraction (22) in order to form a pressurized gas mixture (in 1), characterized in that the second fraction (22) is expanded (via 23; column 2, line 65) before at least one portion of the first stream (14) is mixed therewith (in 1).

In regard to claim 18, Guillard teaches that the separation unit (9) is autonomous in terms of energy requirements for compressing the gas streams produced by the unit or intended for the unit (interpreted to mean that either the first fraction entering the air separation unit or the first and second streams produced from the ASU do not have compressors; in this case the first stream (14) or the second stream (15) from the air separation unit (9) is not compressed; also noted is that compressor 29 is driven by turbine 30).

In regard to claim 20, Guillard teaches that the pressurized gas stream (Air in) is air intended for a blast furnace (column 2, lines 30-39).

In regard to claim 21, Guillard teaches that the air separation unit (9) is a cryogenic distillation separation unit (column 2, line 41).

Claims 15, 18-21, 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Magnet (US 6576040). In regard to claims 15, 19, and 25, Magnet teaches a method and installation (Fig. 2) for enriching a pressurized gas stream (AIR) with one of its constituents A (O2), which comprises the steps of: a) dividing the stream (AIR) into at least first (5) and second fractions (8); b) sending at least one portion of the first fraction (5) into a separation unit (4); c) supplying, from the separation unit (4), at least first (10) and second (9) streams, the first stream (10) of which has a content of constituent A (O2; column 4, line 15) greater than that of the first fraction (5); and d) mixing at least one portion of the first stream (10) with at least one portion of the second fraction (8) in order to form a pressurized gas mixture (12), characterized in that the second fraction (8) is expanded (via 11) before at least one portion of the first stream (10) is mixed therewith.

In regard to claim 18, Magnet teaches that the separation unit (4) is autonomous in terms of energy requirements for compressing the gas streams produced by the unit or intended for the unit (interpreted to mean that either the first fraction entering the air separation unit or the first and second streams produced from the ASU do not have compressors; in this case the first stream (10) from the air separation unit (9) is not compressed; also noted is that compressor 18 is driven by turbine 19).

In regard to claim 20, Magnet teaches that the pressurized gas stream (Air in) is air intended for a blast furnace (6, 2).

In regard to claim 21, Magnet teaches that the air separation unit (4) is a cryogenic distillation separation unit (column 5, lines 43).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guillard or Magnet in view of Brugerolle (US 4022030). Guillard and Magnet both individually teach most of the limitations of claims 26 and 27, including that the separation unit comprises a double column air separation unit, but do not teach that the air separation unit comprises a mixing column. However, air separation units having mixing columns are well known, as taught by Brugerolle for example (Fig. 8). Brugerolle teaches an improved air separation unit (Fig. 8) that comprises a medium pressure column (24), a

low pressure column (59) thermally coupled to the medium pressure column (24), and a mixing column (1). Brugerolle further teaches that the air separation unit provides improved performance (column 12, lines 25-32). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the method and installation of Guillard or Magnet with the air separation unit of Brugerolle (fig. 8) for the purpose of providing improved efficiency (column 12, lines 25-32). It is noted that Brugerolle does not include any means for compressing air intended for the medium pressure column (24) or for the mixing column (1).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744

JFP III
October 28, 2010